

Patent Claims

- 5 1. A DNA molecule corresponding to a nucleotide sequence of a cereal pollen major allergen selected from one of the sequences in accordance with SEQ ID NO 1, 3, 5, 7, and 9.
- 10 2. A DNA molecule which hybridises with a DNA molecule according to Claim 1 under stringent conditions and originates from DNA sequences from *Poaceae* species.
- 15 3. A DNA molecule, encoding a polypeptide, which cross-reacts immunologically with the major allergens Sec c 4, Hor v 4 or Tri a 4 from *Secale cereale*, *Hordeum vulgare* or *Triticum aestivum* and originates from DNA sequences from *Poaceae* species.
- 20 4. A DNA molecule, corresponding to a partial sequence or a combination of partial sequences according to one or more of Claims 1 to 3, which encodes an immunomodulatory, T-cell-reactive fragment of a group 4 allergen from the *Poaceae*.
- 25 5. A DNA molecule, corresponding to a nucleotide sequence according to one or more of Claims 1 to 4, encoding an immunomodulatory T-cell-reactive fragment, characterised in that said nucleotide sequence has been specifically modified by specific mutation of individual codons, elimination or addition.
- 30 6. A DNA molecule according to Claim 5, characterised in that the said mutation results in the replacement of one, a plurality of or all cysteines of the corresponding polypeptide with another amino acid.

7. A recombinant DNA expression vector or a cloning system comprising a DNA molecule according to one or more of Claims 1 to 6, functionally linked to an expression control sequence.
- 5 8. A host organism transformed with a DNA molecule according to one or more of Claims 1 to 6 or an expression vector according to Claim 7.
- 10 9. A process for the preparation of a polypeptide encoded by a DNA sequence according to one or more of Claims 1 to 6 by cultivation of a host organism according to Claim 8 and isolation of the corresponding polypeptide from the culture.
- 15 10. A polypeptide corresponding to one of the amino acid sequences in accordance with SEQ ID NO 2, 4, 6, 8 and 10, which is encoded by a DNA sequence according to one or more of Claims 1 to 6.
- 20 11. A polypeptide corresponding to the mature allergen of the amino acid sequences according to Claim 10, selected from the following group of amino acid sequences
- one of the amino acid sequences in accordance with SEQ ID NO 2, 4, or 6, beginning with amino acid 23,
 - 25 - one of the amino acid sequences in accordance with SEQ ID NO 8 or 10, beginning with amino acid 22.
12. A polypeptide according to Claim 10 or 11 as medicament.
- 30 13. A pharmaceutical composition comprising at least one polypeptide according to Claim 12 and optionally further active ingredients and/or adjuvants for the diagnosis and/or treatment of allergies in the triggering of which group 4 allergens from the *Poaceae* are involved.
- 35

- 5 14. Use of at least one polypeptide according to Claim 12 for the preparation of a medicament for the diagnosis and/or treatment of allergies in the triggering of which group 4 allergens from the *Poaceae* are involved and/or for the prevention of such allergies.
- 15 15. A DNA molecule according to one or more of Claims 1 to 6 as medicament.
- 10 16. A recombinant expression vector according to Claim 7 as medicament.
- 15 17. A pharmaceutical composition comprising at least one DNA molecule according to Claim 15 or at least one expression vector according to Claim 16 and optionally further active ingredients and/or adjuvants for the immunotherapeutic DNA vaccination of patients with allergies in the triggering of which group 4 allergens from the *Poaceae* are involved and/or for the prevention of such allergies.
- 20 18. Use of at least one DNA molecule according to Claim 15 or at least one expression vector according to Claim 16 for the preparation of a medicament for the immunotherapeutic DNA vaccination of patients with allergies in the triggering of which group 4 allergens from the *Poaceae*
- 25 are involved and/or for the prevention of such allergies.

30

35